Appeal Brief
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Dated: September 9, 2008
Electronic Signature for Christine M. Holmes: /Christine M. Holmes/

Docket No.: 1323_001RCE
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
W. P. Dowst et al.

Application No.: 10/603,947 Confirmation No.: 3129

Filed: June 25, 2003 Art Unit: 3749

For: HEATING VESSEL Examiner: C. D. Price

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

As required under § 41.37(a), this brief is filed concurrently with the Notice of Appeal.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205.2:

I.	Real Party In Interest
II	Related Appeals and Interferences
III.	Status of Claims
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I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

Jetboil, Inc.

II. RELATED APPEALS AND INTERFERENCES

There are no related other prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision.

III. STATUS OF CLAIMS

Claims 106-160 are pending in this application. The claims under appeal are 106-160 as set forth in the Claims Appendix below.

IV. STATUS OF AMENDMENTS

No amendment was filed after the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Concise explanations of the subject matter defined in claims 106, 117, 129, 140 and 151-153 are as follows:

106. A portable heating system comprising:

a vessel having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction and extraction of contents to be heated (page 6, lines 5-11, Fig. 1, reference 100, 112, 114 and 115), the bottom end having an external bottom side for receiving heat (page 5, lines 18-19, Fig. 2, reference 116);

a top housing having a top rim coupled circumferentially to the external bottom end of said vessel (page 6, lines 26-28, Fig. 1, references 158, 152), a side structure extending downwardly from said top rim and having a plurality of exhaust vents formed therein (page 7, lines 30, Fig. 1, reference 156), and a bottom rim (page 6, line 28, Fig. 1, reference 154);

a single thermally conductive member comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of the external bottom side (page 8, lines 5-10, Fig. 2, reference 160) and having an inner peripheral edge defining an inner diameter (page 8,

lines 14, Fig. 2, reference 160) and an outer peripheral edge defining an outer diameter (Fig. 2, reference 160), the conductive member having a plurality of undulating protrusions extending downwardly from the external bottom side (page 8, lines 21-23, Fig. 2, reference 160);

a burner having a heat outlet head disposed below and in a central position with respect to said external bottom side (page 7, lines 11-12, page 9, lines 26-27, Fig. 3, reference 302) and having a fuel intake port configured to couple to a fuel source (page 8, lines 25-29, Figs. 1 and 3, references 104 and 144), the heat outlet head having a diameter less than said thermally conductive member inner diameter and being configured to deliver heat to a central area of the external bottom side (page 9, lines 29 and 30, page 10, lines 1-3, Fig. 3, reference 302);

a bottom housing (page 7, line 26, Fig. 1, reference 147) configured to couple to the bottom rim (page 6, line 28, Fig. 1, references 154 and 140) and substantially encasing the heat source (page 8, lines 24-30, Fig. 3, references 130, 147), the bottom housing having a plurality of air inlet vents formed therein (page 7, lines 26-27, Fig. 1, references 147, 142).

117. A portable heating system comprising:

a burner having a heat outlet head disposed centrally below a bottom end planar surface of a vessel to be heated (page 7, lines 11-12, page 9, lines 26-27, Fig. 3, reference 302) and having a fuel intake port configured to couple to a fuel source (page 8, lines 25-29, Figs. 1 and 3, references 104 and 144), the heat outlet being generally round in form and having a fixed diameter and being configured to deliver heat to a central area of the surface (page 9, lines 29 and 30, page 10, lines 1-3, Fig. 3, reference 302);

a single thermally conductive member comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of the planar surface (page 8, lines 5-8, Fig. 2, reference 160) and having an inner peripheral edge defining an inner diameter (page 8, line 14, Fig. 2, reference 160) and an outer peripheral edge defining an outer diameter (Fig. 2, reference 160), with said inner diameter being greater than said fixed diameter (page 9, lines 26-27, Fig. 3, reference 302), the conductive member having a plurality of

undulating protrusions extending downwardly from the planar surface (page 8, lines 21-23, Fig. 2, reference 160);

a skirt having a top rim coupled circumferentially to said vessel bottom end and encasing the protrusions (page 6, lines 26-28, Fig. 1, reference 158, 152), the skirt having a series of exhaust vents formed therein (page 7, line 30, Fig. 1, reference 156) and having a bottom rim (page 6, line 28, Fig. 1, reference 154);

a base configured to couple to the bottom rim (page 6, line 28, Fig. 1, references 154, 140) and substantially encasing the burner (page 8, lines 24-30, Fig. 3, references 130, 147), the base having a set of air inlet vents formed therein (page 7, lines 26-27, Fig. 1, references 147 and 142).

129. A system for heating a substance, the system comprising:

a vessel having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction and extraction of the substance (page 6, lines 5-11, Fig. 1, references 100, 112, 114, 115), the bottom end having an external bottom side having a central area for receiving heat (page 6, lines 18-19, Fig. 2, reference 116);

a series of integrally connected, thermally conductive protrusions comprising a continuous piece of material fixedly secured to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of said external bottom side (page 8, lines 5-10, Fig. 2, reference 160), the protrusions extending from the vessel external bottom side (page 8, lines 21-23, Fig. 2, reference 160) and defining with the central area a cavity with a fixed diameter (page 8, line 14, Fig. 2, reference 160); and

a heater comprising a heat source having a heat outlet header disposed below said cavity and configured to deliver heat to the cavity (page 7, lines 11-12, page 9, lines 26-27, Fig. 3, reference 302) said header being generally round in shape and having a diameter that is less than said fixed diameter (page 9, lines 29 and 30, page 10, lines 1-3, Fig. 3, reference 302).

140. A heating vessel for use with a heater for heating a substance, the heater having a heat source including a burner head and a port for coupling to a fuel supply system, the heating vessel comprising:

a vessel having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction and extraction of the substance (page 6, lines 5-11, Fig. 1, references 100, 112, 114, 115), the bottom end having an external bottom surface having a central area (page 6, lines 18-19, Fig. 2, reference 16); and

a series of integrally connected thermally conductive protrusions comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of said external bottom surface (page 8, lines 5-10, Fig. 2, reference 160), the protrusions extending from the vessel and defining, with the central area, a cavity of a fixed diameter (page 8, lines 14 and 21-23, Fig. 2, reference 160);

wherein the burner head is disposed generally centrally below said cavity (page 7, lines 11-12, page 9, lines 26-27, Fig. 3, reference 302) and has a diameter that is less than said fixed diameter (page 9, lines 29 and 30, page 10, lines 1-3, Fig. 3, reference 302).

151. A portable heating system comprising:

a vessel defining a cavity having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction to and extraction from said cavity of contents to be heated (page 6, lines 5-11, Fig. 1, references 100, 112, 114, 115), the bottom end having an external bottom side for receiving heat (page 6, lines 18-19, Fig. 2, references 16);

a top housing having a top rim coupled circumferentially to the external bottom end of said vessel (page 6, lines 26-28, Fig. 1, references 158, 152), a side structure extending downwardly from said top rim and having a plurality of exhaust vents formed therein (page 7, line 30, Fig. 1, reference 156), and a bottom rim (page 6, line 28, Fig. 1 reference 154);

a bottom housing having a top rim configured to be selectively coupled to the top housing bottom rim (page 6, line 28, Fig. 1, references 146, 140, 154) and containing a burner having a heat outlet head (page 7, lines 11 and 12, Fig. 3, reference 302)

disposed below the external bottom side when said bottom housing is coupled to said top housing (page 8, line 14, page 9, line 26, Figs. 1 and 3, references 116, 160, 302), said bottom housing further having a plurality of air inlet vents formed therein (page 7, lines 26-27, Fig. 1, references 147, 142);

wherein said bottom housing is so configured and sized as to be removable from said top housing and temporarily placed for storage in said vessel cavity (page 10, lines 1-3, Fig. 4, references 147, 110).

152. A portable heating system as set forth in claim 151 wherein said bottom housing is so configured and sized as to be temporarily contained within said vessel cavity in an upright position with its top rim facing said vessel top end (Fig. 4, references 147).

153. A portable heating system as set forth in claim 151 wherein said burner fuel intake port is disposed at a lower end of said bottom housing so as to facilitate the coupling to a fuel source in a position below said bottom housing (page 7, lines 11 and 12, Figs. 1 and 3, references 144, 147).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Ground 1

Claims 151-154 and 159 stand rejected under 35 U.S.C. 102(b) as being anticipated by US 002154305 (Goerl).

Ground 2

Claims 106-116 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Goerl in view of GB 0008822881 (Horner).

Ground 3

Claims 117-149 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Goerl in view of Horner and DE 3339849.

Ground 4

Claims 156-160 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Goerl in view of FR 2446097.

VII. ARGUMENT

Section 102 Rejections

To anticipate a claim, the reference must teach each and every element of a claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Ground 1

Rejection of claims 151-154 and 159 under 35 U.S.C. 102(b) as being anticipated by US002154305 (Goerl).

Claim 151 recites "a vessel defining a cavity having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction to and extraction from said cavity of contents to be heated, the bottom end having an external bottom side for receiving heat…". Thus, not specifically specified but should be understood is that the top end is at the top extremity and the bottom end is at the bottom extremity.

The Examiner has said that the '305 reference "shows a portable heating system comprising a vessel (13) having a thermally conductive bottom end defining an external bottom side (31, 32, 33) of the vessel". The Examiner has thus included not only the surface 31, but also the surfaces 32 and 33 as defining a bottom end when, in fact the

elements 32 and 53 are located near the top end of the vessel 13. That is, although elements 32 and 33 may be on a bottom side of the vessel, they are not at the bottom end. Thus, when referring to the vessel 13 of the '305 reference, clearly the surfaces 32 and 33 cannot reasonably be considered to reside at a bottom end of the vessel 13.

Claim 151 also recites "a top housing having a top rim coupled circumferentially to the external bottom end of said vessel...". In this regard the Examiner has said that the '305 reference shows "a top housing (16) having a top rim (53) coupled circumferentially to the external bottom end of the vessel (at 32, 53)...". That is, although it may be argued that the top rim 58 may be coupled to a bottom side of the vessel, it cannot be reasonable argued that it is connected to the bottom end thereof. For the reasons discussed hereinabove, we believe that the Examiner has taken an improper and incorrect reading of the claim language.

Considering now the significance of the difference in the structural features as discussed above, it will be seen that in the Goerl reference, the member 16 has a front turned bead 53 that engages the portion 32 or portion 22 of the pan 12. It should be recognized that these portions 22 and 32 are underside surfaces of the respective rims 24 and 34 of the pans 12 and 13. The rims 24 and 34 are clearly at the top end of the pans 12 and 13, and therefore the surfaces 22 and 32 are associated with the top ends of the pans 12 and 13. It is these rims 22 and 32 which interface with the outturned bend 53 at the top of the top housing. Each of the pans 12 and 13 have a downwardly extending portion (23 for pan 12 and 33 for pan 13) which connected to the respective bottoms 21 and 31. Thus, each of the pans 12 and 13 interface with the outturned bead 53 at the top member 16 near the upper ends thereof and have a major portion of the pan extending down into the member 16. It would appear from the description that the purpose is to allow the heat to flow not only the bottoms 21 and 31 but also over the side surfaces 23 and 33. This is substantially different from the appellant's invention where the heat is preferably directed to the lower end of the vessel so that the attached protrusion can most effectively transfer the heat from the burner to the vessel.

In respect to the rejection of claim 152, which recites that the bottom housing is so configured and sized as to be temporarily placed in said vessel cavity in an upright position with its top rim facing said vessel top end, the Examiner has said that "since the diameter of the lower end rim (55) of the bottom housing (17) is less than the diameter of vessel outlet port (35) it is capable of being place in the vessel in the manner set forth in the claim". With this the appellants strongly disagree.

Even though the diameter of the lower end rim (55) is less than the diameter of the vessel outlet port (35), it does not follow that the bottom housing 17 can be placed in the vessel cavity in an upright position, since the lower wall portion 33 is conically tapered and would not allow the bottom housing 17 to be placed therein in an upright position. For that reason, the bottom housing 17 is placed within the container 13 in an inverted position as will be seen in Fig. 4.

Claim 153 recites that the "burner fuel intake port is disposed at a lower end of said bottom housing so as to facilitate the coupling to a fuel source in a position below said bottom housing". In this regard, the Examiner has said that "in regard to claims 153 and 154, the fuel source and burner are formed as a single unit and supported by and at a lower bottom housing location (i.e. below the top rim (49))". Although this is true, the combination of the fuel source and burner are not located in a position below the bottom housing but are rather contained within the bottom housing as will be seen in Fig. 8. Clearly the burner fuel intake port is not coupled to a fuel source in a position below the bottom housing as recited.

For the reasons discussed hereinabove, the appellants believe that the Examiner has not shown that the cited reference teaches each and every element of the claims, as required. Accordingly, the appellants believe that claims 151-154 and 159 are not anticipated by the '305 reference and are therefore allowable thereover.

Section 103 Rejections

According to the MPEP 2143, three basic criteria must be met to establish a prima facie case of obviousness. First, there must be some suggestion or motivation,

either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. All of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, MPEP 2143.03. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). We believe that the Examiner has not met the basic requirements for establishing a prima facie case of obviousness.

Ground 2

Rejection of claims 106-116 as being unpatentable over Goerl in view of Horner.

Claim 106 recites "a vessel having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction and extraction of contents to be heated, the bottom end having an external bottom side for receiving heat;... a top housing having a top rim coupled circumferentially to the external bottom end of said vessel...". This is substantially the same language as claim 151, and the Examiner's remarks concerning the '305 reference as showing those features is substantially identical as discussed hereinabove. Accordingly, for the same reasons as discussed hereinabove, we believe that the recited features are neither shown nor suggested by the '305 reference.

Claim 106 also recites "a single thermally conductive member comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of the external bottom side and having an inner peripheral edge defining an inner diameter and an outer peripheral edge defining an outer diameter, the conductive member having a plurality of undulating protrusions extending downwardly from the external bottom side".

The Examiner admits that the '305 reference does not show such a feature but says that the GB000882881 reference teaches "from applicants same portable heater field of endeavor, placing a single thermally conductive member (15) along the entire extent of a peripheral edge of the external bottom side".

The appellants do not agree that this reference is in the "same portable heater field of endeavor" as the present invention. This reference describes a tea kettle which may be portable to the extent that it is moved to and from a stove but is not a self-contained, portable heating system which includes a heater with a top housing, bottom housing and a burner. Accordingly, we do not believe that the tea kettle design is necessarily in the same portable heater field of endeavor as suggested by the Examiner.

In respect to the rejections of claims 106-116, the Examiner has also said that "it would have been obvious to a person having ordinary skill in the art to modify US002154305 to include a single thermally conductive member (15) along the entire extent of a peripheral edge of the external bottom side in the manner set forth in appellants claims, in view of the teaching of GB000882881". With this, the appellants respectfully disagree.

Even assuming, arguendo, that the Horner reference where determined to be in the "same portable heater field of endeavor", one skilled in the art of field cooking kits is not likely to refer to the art of tea kettles in order to improve his product. Further, there is nothing in either of the two references which would suggest the combination of the features with the other reference to obtain the appellant's invention as suggested by the Examiner.

It should be recognized that the '305 patent has been publicly available since 1939 and that the '881 has been publicly available since 1961. If the combination of the features of these two references were obvious to one skilled in the art, why has no one else (i.e. other than the present inventors), made such a combination in the last 45 years?

Ground 3

Rejection of claims 117-149 under 35 U.S.C. 103(a) as being unpatentable over Goerl in view of Horner and DE 3339848.

In the rejection of claims 117-149, the Examiner has combined the '305 reference with the '881 reference and also with DE3339848. In respect to the '305 and '881 references the discussion set forth hereinabove is applicable. In respect to DE3339848, the Examiner has said that reference "teaches (Figures 1 and 2), from appellants same portable heater field of endeavor dimension the outer perimeter diameter to be less than the diameter of the inner central cavity formed by the thermally conductive members, for the purpose of effectively directing heat from the burner flames into and along the heat transfer passages". The appellants respectfully disagree.

Claim 117 recites:

"a burner having a heat outlet head disposed centrally below a bottom end planar surface of a vessel... the heat outlet being generally round in form and having a fixed diameter and being configured to deliver heat to a central area of the surface..."

"a single thermally conductive member comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of the surface and having an inner peripheral edge defining an inner diameter and an outer peripheral edge defining an outer diameter, with said inner diameter being greater than said fixed diameter, the conductive member having a plurality of undulating protrusion extending downwardly from the surface"

In contrast, the '848 reference shows in Figures 1 and 2 a wire mesh structure that is contiguous with the inner walls of an outer vessel 12 and with an opening in the bottom, apparently for the insertion of the burner. The burner is located below the bottom surface of the inner vessel, but is above the lower portion of the wire mesh structure such that that portion of the wire mesh structure which closely surrounds the

burner plays no role in conducting the heat from the burner to either of the vessels. Thus, the mesh structure of the '848 reference serves an entirely different purpose than the conductive member of the appellants invention and the coil of the Horner reference. For these reasons, the features of the '848 reference are not obviously adaptable to use with these of the other references and cannot reasonably be considered to teach the obvious modification of the Goerl and Horner combination in order to obtain the appellants invention as claimed.

Ground 4

Rejection of claims 156-158 and 160 under 35 U.S.C. 103(a) as being unpatentable over Goerl in view of FR 2446097.

In the rejection of claims 156-158 and 160 as being unpatentable over the '305 reference in view of FR2446097, the Examiner has said that the '305 reference shows and discloses the invention with the possible exception to

"an igniter portion disposed above the burner and a recess or indention in the cover (15) for receiving or to accommodate the extending igniter portion; and friction or slot and dimple attachment means for upper and lower housing".

Although the '097 reference was said to teach the threaded fuel connection, it was not said to teach or suggest the features described hereinabove. Rather, the Examiner has relied on Official Notice "That it is well known to place igniter above, that is downstream of fuel exiting burner heads…". He went on to say that "Regarding any necessary recess or indentation in the cover for receiving or accommodate the extending igniter portion it is noted that the covers (23, 39, 40, 41) of US002154305 is formed with such a recess capable of performing this function". With this, the appellants respectfully disagree. Any such recess in those covers are provided for entirely different purposes and are clearly not provided for or adaptable for the purpose of accommodating the extending igniter portion.

VIII. CONCLUSION

For the reasons discussed hereinabove, the appellants request that the Examiner's rejections of the claims be reversed and that the claims be allowed to issue.

Appellant believes a fee is due with this response. Please charge Deposit Account No. 50-0289, under Order No. 1323_001 from which the undersigned is authorized to draw.

Dated: September 9, 2008

Respectfully submitted,

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APPENDIX A – CLAIMS APPENDIX

106. A portable heating system comprising:

a vessel having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction and extraction of contents to be heated, the bottom end having an external bottom side for receiving heat;

a top housing having a top rim coupled circumferentially to the external bottom end of said vessel, a side structure extending downwardly from said top rim and having a plurality of exhaust vents formed therein, and a bottom rim;

a single thermally conductive member comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of the external bottom side and having an inner peripheral edge defining an inner diameter and an outer peripheral edge defining an outer diameter, the conductive member having a plurality of undulating protrusions extending downwardly from the external bottom side;

a burner having a heat outlet head disposed below and in a central position with respect to said external bottom side and having a fuel intake port configured to couple to a fuel source, the heat outlet head having a diameter less than said thermally conductive member inner diameter and being configured to deliver heat to a central area of the external bottom side;

a bottom housing configured to couple to the bottom rim and substantially encasing the heat source, the bottom housing having a plurality of air inlet vents formed therein.

107. A portable heating system as set forth in claim 106 wherein said single thermally conductive member includes interconnecting segments between adjacent protrusions.

108. A portable heating system as set forth in claim 107 wherein said single thermally conductive member is generally square waved shaped in form.

109. A portable heating system as set forth in claim 107 wherein said interconnecting segments are substantially parallel to said external bottom side.

110. A portable heating system as set forth in claim 106 wherein said single thermally conductive member is composed of an aluminum material.

111. A portable heating system as set forth in claim 106 wherein said single thermally conductive member is formed of a strip having a thickness of about 0.012 inches.

112. A portable heating system as set forth in claim 106 wherein said single thermally conductive member has a radial dimension between said inner peripheral edge and said outer peripheral edge of about 0.3 inches.

113. A portable heating system as set forth in claim 106 wherein said protrusions of said thermally conductive member extend[[s]] downwardly about 0.5 inches.

114. A portable heating system as set forth in claim 107 wherein said interconnecting segments have a length between protrusions of about 0.05 inches.

115. A portable heating system as set forth in claim 106 wherein said single thermally conductive member has an aspect ratio which is in the range of about 8.66-9.48.

116. A portable heating system as set forth in claim 106 wherein said single conductive member is attached to said external bottom side by way of sonic welding.

117. A portable heating system comprising:

a burner having a heat outlet head disposed centrally below a bottom end planar surface of a vessel to be heated and having a fuel intake port configured to couple to a

fuel source, the heat outlet being generally round in form and having a fixed diameter and being configured to deliver heat to a central area of the surface;

a single thermally conductive member comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of the planar surface and having an inner peripheral edge defining an inner diameter and an outer peripheral edge defining an outer diameter, with said inner diameter being greater than said fixed diameter, the conductive member having a plurality of undulating protrusions extending downwardly from the planar surface;

a skirt having a top rim coupled circumferentially to said vessel bottom end and encasing the protrusions, the skirt having a series of exhaust vents formed therein and having a bottom rim;

a base configured to couple to the bottom rim and substantially encasing the burner, the base having a set of air inlet vents formed therein.

118. A portable heating system as set forth in claim 117 wherein said single thermally conductive member includes interconnecting segments between adjacent protrusions.

119. A portable heating system as set forth in claim 118 wherein said protrusions and interconnecting segments form a generally square waved shape.

120. A portable heating system as set forth in claim 118 wherein said segments are aligned substantially parallel to the surface to be heated.

121. A portable heating system as set forth in claim 117 wherein said single thermally conductive member is composed of an aluminum material.

122. A portable heating system as set forth in claim 117 wherein said thermally conductive member is formed of a strip having a thickness of about 0.012 inches.

123. A portable heating system as set forth in claim 117 wherein said thermally conductive member has a radial dimension between said inner peripheral edge and said outer peripheral edge of about 0.3 inches.

124. A portable heating system as set forth in claim 117 wherein said protrusions extend downwardly from the surface about 0.5 inches.

125. A portable heating system as set forth in claim 118 wherein said interconnecting segments are about 0.05 inches in length.

126. A portable heating system as set forth in claim 117 wherein said thermally conductive member has an aspect ratio in the range of about 8.66-9.48.

127. A portable heating system as set forth in claim 117 wherein said thermally conductive member is attached to said surface to be heated by way of brazing.

128. A portable heating system as set forth in claim 117 wherein said thermally conductive member is attached to said surface to be heated by way of sonic welding.

129. A system for heating a substance, the system comprising:

a vessel having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction and extraction of the substance, the bottom end having an external bottom side having a central area for receiving heat;

a series of integrally connected, thermally conductive protrusions comprising a continuous piece of material fixedly secured to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of said external bottom side, the protrusions extending from the vessel external bottom side and defining with the central area a cavity with a fixed diameter; and

a heater comprising a heat source having a heat outlet header disposed below said cavity and configured to deliver heat to the cavity said header being generally round in shape and having a diameter that is less than said fixed diameter.

130. A system as set forth in claim 129 wherein said protrusions are interconnected by segments between adjacent protrusions.

131. A system as set forth in claim 130 wherein said protrusions and interconnecting segments selectively form a generally square waved shape.

132. A system as set forth in claim 130 wherein said interconnecting segments are disposed substantially parallel to said external bottom side.

133. A system as set forth in claim 129 wherein said protrusions are composed of an aluminum material.

134. A system as set forth in claim 129 wherein said protrusions are formed of a strip having a thickness of about 0.012 inches.

135. A system as set forth in claim 129 wherein said protrusions have a radial dimension between said inner peripheral edge and said outer peripheral edge of about 0.3 inches.

136. A system as set forth in claim 129 wherein the length of said protrusions extending from the external bottom side is about 0.5 inches.

137. A system as set forth in claim 129 wherein said thermally conductive protrusions have an aspect ratio in the range of about 8.66-9.48.

138. A system as set forth in claim 129 wherein said thermally conductive protrusions are secured to the external bottom side by way of brazing.

139. A system as set forth in claim 129 wherein said thermally conductive protrusions are secured to the external bottom side by sonic welding.

140. A heating vessel for use with a heater for heating a substance, the heater having a heat source including a burner head and a port for coupling to a fuel supply system, the heating vessel comprising:

a vessel having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction and extraction of the substance, the bottom end having an external bottom surface having a central area; and

a series of integrally connected thermally conductive protrusions comprising a continuous piece of material fixedly attached to and positioned adjacent to and extending continuously along the entire extent of a peripheral edge of said external bottom surface, the protrusions extending from the vessel and defining, with the central area, a cavity of a fixed diameter;

wherein the burner head is disposed generally centrally below said cavity and has a diameter that is less than said fixed diameter.

141. A system as set forth in claim 140 wherein said protrusions are interconnected by segments between adjacent protrusions.

142. A system as set forth in claim 141 wherein said protrusions and interconnecting segments selectively form a generally square waved shape.

143. A system as set forth in claim 141 wherein said interconnecting segments are disposed substantially parallel to said external bottom side.

144. A system as set forth in claim 140 wherein said protrusions are composed of an aluminum material.

145. A system as set forth in claim 140 wherein said protrusions are formed of a strip having a thickness of about 0.012 inches.

146. A system as set forth in claim 140 wherein said protrusions have a radial dimension between said inner peripheral edge and said outer peripheral edge of about 0.3 inches.

147. A system as set forth in claim 140 wherein the length of said protrusions extending from the external bottom side is about 0.5 inches.

148. A system as set forth in claim 140 wherein said thermally conductive protrusions have an aspect ratio in the range of about 8.66-9.48.

149. A system as set forth in claim 140 wherein said thermally conductive protrusions are secured to the external bottom side by way of brazing.

150. A system as set forth in claim 140 wherein said thermally conductive protrusions are secured to the external bottom side by sonic welding.

151. A portable heating system comprising:

a vessel defining a cavity having enclosed sides, a thermally conductive bottom end and a top end forming an opening for the introduction to and extraction from said cavity of contents to be heated, the bottom end having an external bottom side for receiving heat;

a top housing having a top rim coupled circumferentially to the external bottom end of said vessel, a side structure extending downwardly from said top rim and having a plurality of exhaust vents formed therein, and a bottom rim;

a bottom housing having a top rim configured to be selectively coupled to the top housing bottom rim and containing a burner having a heat outlet head disposed below the external bottom side when said bottom housing is coupled to said top housing, said bottom housing further having a plurality of air inlet vents formed therein;

wherein said bottom housing is so configured and sized as to be removable from said top housing and temporarily placed for storage in said vessel cavity.

152. A portable heating system as set forth in claim 151 wherein said bottom housing is so configured and sized as to be temporarily contained within said vessel cavity in an upright position with its top rim facing said vessel top end.

153. A portable heating system as set forth in claim 151 wherein said burner fuel intake port is disposed at a lower end of said bottom housing so as to facilitate the coupling to a fuel source in a position below said bottom housing.

154. A portable heating system as set forth in claim 153 wherein, when said fuel source is coupled to said burner fuel intake port, both the bottom housing and the fuel source are storable in said vessel cavity.

155. A portable heating system as set forth in claim 154 wherein said fuel source is threadably coupled to said burner fuel intake port.

156. A portable heating system as set forth in claim 151 wherein said bottom housing also includes an igniter which extends to a position above said heat outlet head.

157. A portable heating system as set forth in claim 156 wherein said igniter has a portion which is disposed above the level of said lower housing top rim.

158. A portable heating system as set forth in claim 157 and including a cover for said vessel top end, said cover having an indention therein to receive a portion of said igniter when said bottom housing is stored in said vessel cavity and said top end cover is in place over said vessel top end.

159. A portable heating system as set forth in claim 151 wherein said bottom housing top rim is coupled to said top housing bottom rim by way of frictional fit of said top housing bottom rim within said bottom housing upper rim.

160. A portable heating system as set forth in claim 158 and further wherein said bottom housing upper rim includes one or more inwardly extending dimples that register with corresponding slots in said upper housing.

APPENDIX B – EVIDENCE APPENDIX

Not Applicable.

APPENDIX C – RELATED PROCEEDINGS APPENDIX

Not Applicable.